

18. Elaborate on organization and structure of bacterial genomes.
 19. Illustrate the chemical methods and its importance of sterility to prevent infections and contamination.
 20. Discuss the principles, procedures, and applications of Kirby-Bauer disk diffusion and broth microdilution techniques.
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NOVEMBER/DECEMBER 2024

**FABC32/CABC32 — MICROBIOLOGY I
(Allied)**

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

Contrast biogenesis with the theory of spontaneous generation.

2. Write the principle of dark field microscopy.
3. What is the role of peptidoglycans in the bacterial cell wall?
4. List the limitations of Albert's staining.
5. On what criteria R.H. Whittaker classify organisms into the five kingdoms?
6. List the challenges associated with the biological species Concept.
7. Write the objective of cultural preservation.

8. What methods are used to control growth in continuous cultures?
9. Exhibit the unique structural features of the T4 bacteriophage.
10. How does Minimum Inhibitory Concentration used to assess the effectiveness of antimicrobial agents against microbial growth?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Highlight the major contributions of Louis Pasteur and the impact of his work in advancing medical science.

Or

- (b) Compare and contrast simple and compound microscopes.

12. (a) Draw and describe the structure and function of the nucleus in eukaryotic cells.

Or

- (b) State the principle of the hanging drop technique. Give its applications along with advantages and limitations.

13. (a) Define binomial nomenclature and explain its importance in the classification of microorganisms with examples.

Or

- (b) Analyze the role of plasmids in the development and spread of antibiotic resistance among bacterial populations.

14. (a) Present the four phases of the bacterial growth curve and explain its characteristics of each phase.

Or

- (b) Justify the significance of liquid chemical sterilization.

15. (a) Classify the *Chlorella* based on its cellular characteristics.

Or

- (b) Explain the mechanisms of action of antibiotics on bacterial cells.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss the principles, types, components, sample preparation, and applications of electron microscopy.
17. Describe the differential staining techniques and their significance in microbiology.